Santee Cooper

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January 26, 2007

Mr. Joe Eller
Bureau of Air Quality
South Carolina Department of
Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

RE: Pee Dee Generating Station Construction Permit Application Addendum, Mercury Control, Auxiliary Boiler, and Selection of Design Fuel

Dear Mr. Eller:

Santee Cooper is providing the following additional information to clarify and supplement the pending PSD construction permit application for the new Pee Dee facility. The three areas for which supplemental information is being provided are:

- Co-benefit mercury reductions that proposed configuration of pollution control technology is expected to be achieved at the Pee Dee facility;
- Reasons why the auxiliary boiler is no longer needed and thus has been eliminated from the proposed construction project; and
- Selection of eastern bituminous coal as the design fuel and how this selected coal relates to the proposed use of petroleum coke (pet coke) at the Pee Dee facility.

Each of these topics is briefly discussed below.

Co-Benefit Mercury Reductions

As a follow up to Santee Cooper's letter of December 21, 2006 concerning the selection of an electrostatic precipitator (ESP) for particulate control at the proposed Pee Dee Station, attached please find documents discussing the co-benefit mercury control levels expected with the proposed controls at Pee Dee Station. These controls will include the ESP, selective catalytic reduction (SCR), and limestone forced oxidation (LSFO) flue gas desulfurization (FGD).

As noted in these documents, the ESP/SCR/FGD control system will deliver mercury removal efficiencies roughly equivalent to those provided by a fabric filter system. Notably, the enclosed US DOE / NETL paper indicates that the technology configuration proposed for the Pee Dee facility can expect to achieve mercury reductions between 70 and 97 percent, with a best estimate of an 85

percent reduction.[1] This same level of mercury control was documented in the enclosed technical presentation by CONSOL Energy, which provides a report on five coal-fired power plants equipped with the ESP/SCR/FGD control system.[2]

Another important factor in evaluating mercury control levels is the Pee Dee units' compliance with both the mercury emissions standards and allowance-holding requirements established under the recently adopted Clean Air Mercury Rule (CAMR). As noted in the PSD application, CAMR establishes a new source performance standard (NSPS) for mercury emissions from new bituminous coal-fired electric generating units. That NSPS sets a mercury emissions limit of $21*10^{-6}$ lb/MWh, which converts to approximately $2.27*10^{-6}$ lb/MMBtu heat input in the case of the Pee Dee units. Compliance with this NSPS limit will guarantee, at a minimum, mercury removal efficiencies that range from 70 to 90 percent, depending on mercury content of the eastern bituminous coals actually fired at the Pee Dee units. In addition, CAMR imposes a mercury allowance-holding requirement that provides very strong financial incentives for Santee Cooper to minimize mercury emissions from the Pee Dee units to the maximum extent feasible. Mercury allowances under the CAMR program are projected to be a very valuable commodity and could have a market value up to the safety valve price of $35,000 per pound of mercury. Maximizing the mercury removal efficiencies of the ESP/SCR/FGD control system installed on each Pee Dee unit will thus lower the number of mercury allowances that Santee Cooper must consume to meet its CAMR allowance-holding requirement. Furthermore, the overall emissions cap has the practical effect of requiring all mercury emissions actually emitted from the Pee Dee units to be offset at a 1:1 ratio with mercury allowances on an annual basis. Thus, operation of the Pee Dee units will result in no net increase in mercury emissions.

Finally, SC DHEC should give careful consideration to the design coal being burned at the Pee Dee station in evaluating the effectiveness of various pollution control technology options. One such example is the significant impacts of high-sulfur coals on PM control technologies. As explained in our prior letter to SC DHEC, dated December 21, 2006, the use of high-sulfur eastern bituminous coal was an important limiting factor for Santee Cooper selecting an ESP, instead of a fabric filter system, for controlling PM emissions at Pee Dee Station. Another notable example relates to mercury controls achievable on electric generating units burning high sulfur bituminous coals, particular when the units are installed with SCR control technology. A technical presentation by DOE/NETL[3] shows that the presence of SCR controls dramatically increases the concentration of SO_3 in power plant flue gas. Such increases in SO_3 levels can dramatically reduce the effectiveness of fabric filter systems, even when combined with activated carbon injection. One recent technical presentation indicates that increasing flue gas SO_3 concentrations from only 1.5 to 6.0 parts per million effectively eliminated sorption of mercury by ash and/or activated carbon.[4]

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1 Mercury Capture and Fate Using Wet FGD at Coal-Fired Power Plants, Miller, et.al., USDOE, National Energy Technology Laboratory, and Science Applications International Corporation, August 2006.

2 Mercury Emissions from Coal-Fired Facilities with SCR-FGD Systems, J. Withum, CONSOL Energy, presented at DOE/NETL's Mercury Control Technology Conference, December 2006.

3 Projection of U.S. Coal-Fired Power Plants Potentially Impacted by Excess SO3 Emissions, J. Murphy, Science Applications International Corporation, for DOE/NETL, DOE/NETL Environmental Controls Conference, May 2006.

4 Effect of SO3 on Hg Removal by Fly Ash and Activated Carbon, K. Dombrowski, URS Corp., 2006 Mercury Control Technology Conference, December 2006.

Elimination of the Auxiliary Boiler

In response to Santee Cooper's letter of October 13, 2006 addressing SC DHEC and US EPA comments on the permit application, you requested additional information on the deletion of the auxiliary boiler and why it was not needed. An auxiliary boiler is not required for startup of the unit. Steam is needed during startup principally for steam turbine warming and turbine steam seals. The steam necessary for startup will be generated by the main boiler after initial firing has begun. No startup steam is required for initial firing of the boiler.

Design Fuel for Pee Dee Station

Also in response to the same letter, you requested additional information on the use of pet coke at the Pee Dee Station as a fuel and how the pet coke impacted the proposed SO_2 emission limits. The proposed SO_2 emission limits were developed based on the use of design coal with the maximum sulfur content levels selected for the Pee Dee Station. In so doing, we evaluated current SO_2 BACT limits for sulfur dioxide at similar units burning bituminous coal and evaluated the SO_2 removal efficiencies achievable with coal having the design specifications developed for the Pee Dee Station. The combustion of pet coke was not considered in the BACT analysis, since it would not elevate or otherwise impact the sulfur content levels in setting the proposed BACT limit.

Santee Cooper appreciates your time and effort in reviewing this application. If you have any questions or concerns, please contact Mr. Kevin Clark at either (843) 761-8000 ext. 5193 or kjclark@santeecooper.com.

Sincerely,

Jay Hudson, PE
Manager
Environmental Management

JAH:JJM:KJC:dss

Enclosures (4)

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